Nutritional Knowledge, Attitude & Practices Associated with Polycystic Ovary Syndrome in Selected Areas of Durgapur, West Bengal

A
Synopsis/ Research Proposal

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Title of the Ph.D. Research: Nutritional Knowledge, Attitude & Practices Associated with Polycystic Ovary Syndrome in Selected Areas of Durgapur, West Bengal

1. **State of Art:** In present days' reproductive age women suffers from different gynecological problems & Polycystic Ovarian Syndrome (PCOS) or Stein-Leventhal syndrome is considered to be as one of the most prevalent endocrine disorder in females (Azziz et al., 2004; Dashti et al.,2022). Infertility, ovarian cysts, monthly irregularities and other health issues like cardiovascular issues, type 2 diabetes mellitus (T2DM) and endometrial cancer affect 5% to15% women in their reproductive age because of hormonal imbalances (Abeen et al., 2022). PCOS is a disorder that has been described since 1935 by Stein and Leventhal (1935) and is characterized by the development of approximately 10 tiny cysts. The diameter of these cysts is ranging from 2 to 9 mm on single or both ovaries, as well as an ovarian volume in at least one ovary exceeding 10 mm. Since PCOS affects the ovaries, it is considered as a significant metabolic and reproductive disorder (Caprio e al., 2005). The ovaries and ovulation in women of reproductive age are affected by PCOS that is a "syndrome" or collection of symptoms (Goodarzi et al., 2011). It is frequently characterized by irregular or an ovulatory period, as well as hyper androgenic symptoms such acne, seborrhea, hirsutism, alopecia and polycystic ovaries on pelvic sonography (Shenoy et al., 2016). PCOS diagnostic criteria were first established by the National Institutes of Health (NIH) in 1990 and then the Rotterdam criteria were published in 2003. It is confirmed when two of the three characteristics are present- (i) oligo-ovulation or anovulation which is defined as oligomenorrhea (intermenstrual intervals of ≥35 days) and amenorrhea (intervals >3 months); (ii) hyperandrogenism, either clinically or biochemically; and (iii) the presence of polycystic ovaries on ultrasonography (multiple cysts >12 in number, each measuring 2–9 mm in size).The AES criteria, which were defined in 2006 by the Androgen Excess Society (AES), included clinical and biochemical hyperandrogenism coupled with either polycystic ovaries or oligo/anovulation (Mintu Dewri et al, 2022**).**

   It is predicted that between 4% to 20% of people worldwide have PCOS (Deswal et al., 2020). In India, the prevalence of PCOS ranges from 5.5% to 19.9% (Rozati, 2021). Environmental circumstances and genetic reasons can be responsible for PCOS's rising prevalence, but there

may also be other factors at play(Jones et al., 2019).A person's susceptibility to develop PCOS may be influenced by specific genes, gene-gene interactions, or interactions between genes and the environment. PCOS is a polygenic and complex illness. Numerous possible genes with single-nucleotide polymorphisms or mutations have been linked to a range of PCOS symptoms, according to multiple genetic studies. All genes and mutations that affect the ovaries either directly or indirectly are associated with PCOS. Genes encoding signalling components linked to steroidogenesis, steroid hormone action, gonadotrophin action and regulation, insulin action and secretion, energy metabolism, and chronic inflammation are most commonly involved in the pathogenesis of PCOS (Kumar, et al., 2022).

Now a days, people are becoming more dependent on sedentary lifestyle due to modernization & urbanization. It increases the consumption of unhealthy foods with less physical activity resulting in overweight & obesity. Obesity leads to an increase production of insulin resulting in imbalance of ovarian androgens. It creates an impact on ovulation process. Although PCOS is believed to be a combination of variables including follicular abnormalities, hyperandrogenemia and insulin resistance, the majority of individuals suffering from PCOS exhibit metabolic dysfunction characterized by insulin resistance and compensatory hyperinsulinemia. Moreover, 40% of affected women have insulin resistance, which puts them at risk of developing type 2 diabetes mellitus (T2DM) (Caprio et al., 2005). This disorder is closely linked to the development of glucose intolerance, cardiovascular diseases, and hypertension among others (Rozati, 2021; Heena et al., 2022). Insulin resistance is prevalent in over 60% of PCOS patients regardless of obesity, and 10% of PCOS women develop type 2 diabetes before the age of 40. High level of luteinizing hormone & anti-Mullerian hormone (AMH) have been found to be significantly correlated with PCOS related ovulation disorders. PCOS is one of the main reasons of infertility (Rozati, 2021). It is commonly characterized by irregular or anovulatory cycles with signs of hyperandrogenism such as acne, seborrhea**,** hirsutism, and alopecia (Shenoy et al., 2016).

Studies have shown that stress-induced anovulation can lead to infertility. Significant social, physical, emotional, and psychological impacts are experienced by women with PCOS. In addition, there is a chance that they may feel depressed, anxious, lonely, or unhappy, all of which can be harmful to their health. Furthermore, there is a strong correlation between reproductive and metabolic failure in these women and oxidative stress. Research on this subject is scarce, and the problem has often gone unaddressed (Marie-Louise, 2021).

Lifestyle management plays a very important role in patients with PCOS. The use of physical activity as a PCOS therapy is becoming more widely acknowledged and accepted by both patients and medical experts. Exercise improves glucose transport and metabolism, which amplifies the benefits of insulin sensitivity. A recent meta-analysis found that exercise intensity, rather than quantity, is more important for improving health outcomes. The results of the analyses demonstrate the positive impacts of exercise, with intense exercise potentially having the greatest effects on insulin resistance, body composition, and cardio respiratory fitness (Szczuko et al., 2021).

Lifestyle modification including dietary change is considered as the first line of treatment for PCOS (Jones et al., 2019).Nutrition and health have been among the most popular subjects for researchers. Role of nutrition and diet in prevention of gynecological problems has long been a matter of debate. As PCOS is considered as lifestyle disorder, many researchers have tried to show that an antioxidant rich diet including fruits, vegetables, green tea, vitamins and plant-derived compounds has a preventive role in gynecological problems (Jones et al., 2019; Goodarzi et al., 2011; Heena et al., 2022). As insulin resistance is one of the factor for development of PCOS, low & complex carbohydrate diet is quite beneficial.

Lifestyle management requires knowledge, attitudes, and practices (KAP) about the specific condition that are interrelated with each other. Knowledge is commonly used to determine whether a patient's understanding aligns with biomedical ideas. Attitude refers to a learned inclination to feel, think, and behave a certain way towards a specific object or class of objects. Practice is what people know they should do in a hypothetical situation. PCOS is a chronic illness for which patients must have flawless knowledge, an ideal mindset, and self-care habits in order to make a significant contribution to their life management (lianhong wang et al, 2023). But very limited studies have examined knowledge, attitude, and practice in the PCOS patients, in West Bengal so far. Hence it demands more research to fill the knowledge gap.

2. **Problems to be Investigated:** A better understanding of the role of diet in gynecological problems can change the perspective about development, progression and generation of their adverse effects on women's health. Due to a lack of awareness, many menstrual problems including PCOS remain unidentified and untreated. Such patients fail to conceive and present themselves at fertility clinics. The scenario is most common in Durgapur nowadays. So, it is increasingly important to know about the nutritional knowledge, attitude & practices among

females at an early age, which potentially contributes to early diagnosis and prevents late sequelae of PCOS. Hence this research work is an attempt to investigate the nutritional problems associated with PCOS.

3. **Objectives of the Investigation & Motivation:** In the literature, several works have been done on PCOS. However, there is also some knowledge gap that demands more research. So addressing that demands, the objectives of this research are-

   i) To study the prevalence of PCOS in selected areas of Durgapur, West Bengal
   ii) To study the psychological behaviour & dietary pattern of PCOS patients.
   iii) To compare the nutritional knowledge, attitude & practices of patients with or without PCOS.

   The motivation behind this research is to provide something novel, unexplained, or less known that could advance society and aid in the resolution of real-world issues. This study will be useful in the formulation of regulations and the implementation of dietary programmes for PCOS individuals.

4. **Research Hypotheses:** Based on the objectives, the following research hypotheses has been formulated:

   i) The prevalence rate of PCOS is high among Reproductive Age Women.
   ii) There are changes in psychological behaviour & dietary pattern among PCOS patients.
   iii) There are significant differences in nutritional knowledge, attitude & practices in women with or without PCOS.

5. Research Design & Methodology

Area of Research: The area of study will be the hospitals located in Durgapur city, West Bengal selected purposively.

Sampling: The present study would be an exploratory study. 150 female patients from the age group of 13- 45 years of age group attending the OPD and Gynecological Department of selected hospitals of Durgapur city with higher levels of follicle-stimulating hormone (FSH), progesterone, testosterone, and prolactin and 150 women who are not suffering from PCOS will be selected to compare the knowledge, attitude and practices with and without PCOS, thus total 300 respondents will be selected by purposive sampling method for the study. Based on the objectives of the study, a pre-tested schedule will be used for collection of data.

6. Tools and techniques to be used in the collection of data:

Schedule- A pretested; structured schedule will be used for collection of data. The schedule will contain questions to assess the impact of stress, psychological behavior lifestyle, dietary pattern, nutritional knowledge, attitude & practices on their health.

Independent variables: Age, Height, Weight, education, income group

Dependent variables: PCOS, Health Status- Body Mass Index (BMI), Nutrition knowledge, dietary pattern, attitudes & practice, Stress

Anthropometric Measurement: Anthropometric measurement will include height (in m), Weight (in kg), Body Mass Index (BMI) would be included.

$$\text{BMI}=-\frac{\text{W}}{\text{Height in m}^2}$$

Sources of data: The study will also incorporate secondary data however primary data will form the basis of this research. The primary data will be gathered by interviewing the respondents and using a schedule. The prevalence will be estimated depending upon the number of patients attending the gynecological department & number of patients diagnosed with PCOS.

$$\text{Prevalence (\%)}= \frac{\text{Number of patients diagnosed with PCOS.}}{\text{Number of patients attending the Gynecological department}} \times 100$$

Food frequency schedules will be used to assess dietary habits. The schedule will be designed to obtain data about demographic details of the subjects like name, age, gender, educational qualification, occupation, marital status, annual family income, local area where they live and presence of any diseases. Questions related to their knowledge about PCOS, types of diet pattern they normally follow in home, meal timings, skipping of meals and no. of meal, food preferences, snaking pattern, food habits, dietary intake, nutritional status, lifestyle, Physical activity, height and weight of the patients will elicit useful information with the help of KAP Schedule. To address the stress pattern existing 9-point hedonic scale, perceived stress scale, Depression, Anxiety and Stress Scale-21 will be used as pr the requirement.

7. Analysis of Data:

Descriptive statistical analysis such as diagrammatic representation, percentage, mean, range, standard deviation etc. will be carried out. Health status as BMI is being assumed as a

function of independent variables as Age, height, weight, education, work status, income etc. then it may be tested as

Y= *f* (X1, X2, X3, X4, X5, X6)

Where Y is BMI as dependent variable and X1, X2, X3, X4, X5, X6are Age, height, weight, education, work status, income respectively. (multiple linear regression).

Also Inferential statistical analysis (Z test, paired t-test) will be considered to establish the significance of the hypothesis.

8. Significance and Novelty of the Proposed Research:

In the literature very few works have been focused on the perception about PCOS in India. Presently it is a burning problem for most women of reproductive age. Unhealthy lifestyle pattern is one of the reasons for the occurrence of PCOS. Therefore, assessing the knowledge & dietary pattern is very important to understand the behavior of the patient towards PCOS. Very limited research has been done on understanding the awareness behavior among PCOS patients. Hence, this research will focus on hormonal, psychological &dietary changes of PCOS patients.

9. **Its relevance to the Present Day Problem and Need of the Society:** PCOS is a very complicated endocrine disorder. Blood tests to measure hormone levels, an ultrasound to look at reproductive organs and thorough personal & family histories should be required before a PCOS diagnosis is confirmed. After diagnosis of the disease proper awareness generation is important along with dietary guidance. Through this research theKnowledge, Attitudes & Practices about Diet as well as the psychological perspective of patients will be known. This research will help PCOS patients to overcome the fertility & gynecological problems and advice to get a better future healthy life.

10. Contribution to the Existing Knowledge:

PCOS affects mostly the women in their reproductive age. Our proposed work will contribute to find out the hormonal, dietary & psychological changes of PCOS patients. Also through the investigation, it can be established that diet can change the perspective about development, progression and generation of adverse effects of PCOS on women health.

11. Future Work:

Although several researches has been done on PCOS, more investigation is required into PCOS as a metabolic and reproductive disease. It is also necessary to know that what type of diet would be the best course of action for managing symptoms and enhancing the lives of PCOS women. This study might be improved upon and repeated, or it could be utilized as a springboard to start implementing diet and nutrition education programmes.

12. Limitations:

1. The study will be limited to selected hospitals within Durgapur city only.
2. The study will be carried out with patients who voluntarily agree to take part in it.

Chapterisation:

1. Introduction
2. Review of literature
3. Research Methodology
4. Results & Discussion
5. Conclusion & Suggestions

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